

ENVIRONMENTAL Fact Sheet



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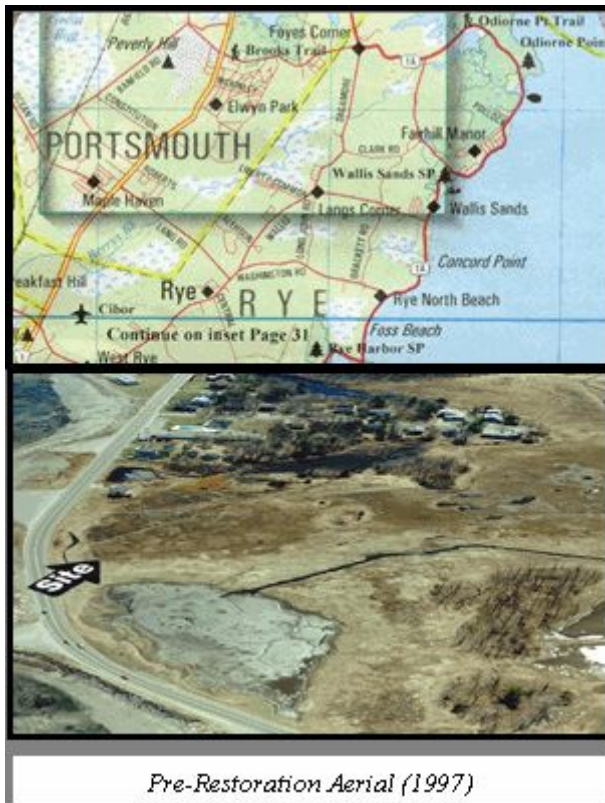
2004

NH Salt Marsh Restoration: Fairhill Marsh, Rye NH

Year of Project: Phase I: 1997 Phase II: 2004 **Type of Project:** Salt Marsh Hydrology Re-establishment

Contractor: Swamp, Inc. **Project Partners:** Town of Rye, Ducks Unlimited, NHCP, NHEP

Type of Monitoring: Post-Restoration



Location: Fairhill Marsh is located on Route 1A (Ocean Boulevard) in Rye, just southwest of Odiorne State Park and northwest of Jenness Beach. There is a parking lot located to the east of Route 1A directly across from Fairhill Marsh.

The Issues:

Ditching & Subsequent Loss of Open Water Habitat: Fairhill Marsh was severely ditched many years ago, thus providing very poor wetland habitat. (awkward) These ditches have drained the marsh surface of deep, permanent pools of water. Stagnant, shallow water (less than 5 inches) remained on the marsh surface as the flooding tides ebb. Since surface waters were extremely shallow, they were subject to evaporation within days. Few fish were able to survive in those conditions.

Natural pannes (depressions on the marsh surface) provide valuable habitat for aquatic invertebrates, mummichogs, aquatic plants and a wide variety of bird types, including wading and predatory birds.

Increased Mosquito Populations Due to Lack of Predatory Minnow Habitat. Salt marsh mosquito larvae were commonly the dominant life form on Fairhill Marsh. Populations of over 100,000 individuals per 100 square feet were not uncommon following flooding tides and/or rainfall. Mummichogs (minnows) had to retreat to tidal creeks as the shallow surface waters evaporated and were not available to control mosquito larvae. Mosquito larvae emerged as adults from the marsh surface in "clouds" and migrate to upland areas for blood feeding.

Invasive Species Replacing Native Saltmarsh Plants. The diversion of stormwater and upland drainage onto saltmarsh surfaces has often stressed native plants and has resulted in

encroachment of freshwater invasive plants such as common reed (*Phragmites australis*). The outer edge???periphery of Fairhill Marsh has been invaded by this plant, where once a more diverse species of native plants existed.

Project Goals:

- Restore bird and fish habitat through the creation of permanent open water habitat (pools).
- Manage *Phragmites australis* at the upland edge to prevent its spread into the high marsh.
- Re-establish submergent aquatic plant habitat.
- Reduce mosquito populations by increased minnow fish in newly-created open waterbodies.

Post-Restoration Status:

In Phase I (1997) of the restoration area, the few existing pannes that were on the marsh surface were re-designed as open water pools. Increased permanent open water habitat has helped to restore the high biological value of the saltmarsh. Aquatic organisms have been able to reside on the marsh surface and increase biodiversity. Mummichog minnows use one or the other consistently, and are now permanent residents of the high marsh and consume mosquito larvae. In the areas where pools have been created, they have eliminated the necessity for mosquito control insecticide applications while simultaneously restoring valuable fish and wildlife habitat.



Post-Restoration aerial taken in October 2000.
Notice created pannes and open water habitat.

Post-restoration of Phase I monitoring was completed in 1999 and revealed large minnow



populations (mummichogs and sticklebacks) that can access over 90 percent of the restored areas. There has been a 95 percent mosquito larval and pupal population reduction and several widgeongrass colonies have been observed in restored panne habitat. Bird populations have responded to the increased open water habitat. This project also demonstrated that the marsh spoil can be spread in a thin layer on the marsh surface (in depressions) and result in an aggressive native plant colonization. *Phragmites australis* was nearby, but never colonized the spoil deposition areas.

In Phase II (2004) additional restoration work was completed. This restoration work included deepening the existing pannes (and making them larger in surface area) so they are more beneficial for waterfowl and wading birds. In addition, the expanding colony of *Phragmites* was mowed to prevent further expansion.

Other Project Partners:

- US Fish and Wildlife Service
- Gulf of Maine Council on the Marine Environment

Funding the Project: Phase 1 (1997)

NHEP	\$7,500.00
Town of Rye	\$2,500.00
Total	\$10,000.00

Funding the Project: Phase 2: (2004)**For Additional Information:**

"Towns Ready to Launch Offensive on Mosquitoes" -
[Portsmouth Herald Article](#)
(March 7, 2004)